

LOW INERTIA LATCHING MICROACTUATOR

Abstract

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A surface micromachined micromagnetic actuator is described, wherein rotary actuation is accomplished by a member pivotably mounted on the surface of the substrate. Angular motion of the member about the pivot point is imparted by the interaction of a magnetic tab affixed to the member, with flux generated in the gap of an electromagnetic core. Rotary motion is restricted to less than 360 degrees by using an integrally formed hinge between the pivoting member and the pivot point, rather than by a more complex bearing. By virtue of this design, a large range of motion can be achieved without requiring a true bearing to be fabricated in the device. The pivoting member is also constrained in either of two stable positions upon de-energization of the electromagnetic core, by the attachment of a bistable spring between the pivoting member and the substrate.

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